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National Priority Chemicals Trends Report (2000-2004)

Section 4
Chemical Specific Trends Analyses for Priority Chemicals (2000−2004): Pentachlorobenzene

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Pentachlorobenzene

Chemical Information:

CAS Number − 608−93−5

Alternate Names − 1,2,3,4,5−Pentachlorobenzene

General Uses − Pentachlorobenzene is used to make pentachloronitrobenzene, a fungicide. In addition, it has been and is currently used as a fire retardant.

Potential Hazards − Short−term exposure to pentachlorobenzene can affect the central nervous system. Long−term exposure can affect the liver and kidneys and can cause tissue lesions.

Summary Analysis:

- NATIONAL: In 2004, seven facilities reported approximately 609,000 pounds of pentachlorobenzene. Compared to the quantity of pentachlorobenzene reported in 2000, there was a 154 percent decrease in 2004; there likewise was an increase of 124,000 pounds, or 26 percent, compared to the 2003 quantity.
- REGIONAL/STATE: Facilities in Region 6 reported almost 100 percent of the pentachlorobenzene; three facilities in Louisiana reported over 99 percent of the total quantity.
- FACILITIES: Of the seven facilities that reported pentachlorobenzene in 2004, two facilities accounted for over 99 percent of the total quantity of this chemical.
- MANAGEMENT: Since 2000, virtually the entire quantity of pentachlorobenzene was treated.
- INDUSTRY SECTOR: Two facilities in each of two sectors: SIC 2812 (Alkalies and chlorine) and SIC 2869 (Industrial organic chemicals, nec) reported over 99 percent of the total quantity in 2004.

National Trends:

Exhibit 4.215 shows the number of facilities that reported pentachlorobenzene in 2000 to 2004 and the quantities that were managed via disposal, treatment, energy recovery, and recycling. In 2004, seven facilities reported approximately 609,000 pounds of pentachlorobenzene. Since 2000, no more than seven facilities reported pentachlorobenzene in any year. Compared to the quantity of pentachlorobenzene reported in 2000, there was a 154 percent decrease in 2004; there likewise was an increase of 124,000 pounds, or 26 percent, compared to the 2003 quantity.

Since 2000, virtually the entire quantity of pentachlorobenzene was treated. Relatively little recycling of pentachlorobenzene was reported in 2000−2004.

Exhibit 4.215. National Management Methods for Pentachlorobenzene, 2000−2004

Management Methods of Pentachlorobenzene and Number of Facilities	2000	2001	2002	2003	2004	Percent Change (2000−2004)	Management Method − Percent of Quantity of This PC (2004)
Number of Facilities	5	4	5	5	7	40.0%	-
Disposal Quantity (pounds)	13	1	3	26	30	132.3%	0.0%
Energy Recovery Quantity (pounds)	0	0	0	0	1,335	NA	0.2%
Treatment Quantity (pounds)	239,838	487,718	311,142	484,707	607,325	153.2%	99.8%
Priority Chemical Quantity (pounds)	239,852	487,719	311,145	484,733	608,691	153.8%	-
Recycling Quantity (pounds)*	1	770	210	18,111	399	39800.0%	-

*Note: Waste minimization is the emphasis of this Report. As such, we primarily focus on quantities of PCs that are managed via onsite/offsite disposal, treatment, or energy recovery because we believe these PC quantities offer the greatest opportunities for waste minimization. Because recycled quantities of PCs are already directed to their best uses, they are considered separate and distinct from the quantities of PCs not recycled. Throughout this section, the recycled quantity is presented to provide some perspective regarding the quantity of this PC already recycled compared to the quantities that are managed via disposal, treatment, and energy recovery and thus potentially available for waste minimization.

Exhibit 4.216 shows the number of facilities that reported pentachlorobenzene within various quantity ranges. Of the seven facilities that reported pentachlorobenzene in 2004, two facilities accounted for more than 99 percent of the total quantity of this chemical.

Exhibit 4.216. Distribution of Quantities by Facilities Reporting Pentachlorobenzene, 2004

Pentachlorobenzene (608,691 pounds)		
Quantity Reported	Number of Facilities Reporting This Quantity (2004)	Percent of Total Quantity of This PC (2004)
up to 10 pounds	0	0.0%
11 − 100 pounds	2	less than 0.1%
101 − 1,000 pounds	2	0.3%
1,001 − 10,000 pounds	1	0.4%
10,001 − 100,000 pounds	0	0.0%
100,001 − 1 million pounds	2	99.3%
> 1 million pounds	0	0.0%

EPA Regional Trends:

Exhibits 4.217 and 4.218 show the quantity of pentachlorobenzene reported by facilities in each EPA Region in 2000 to 2004. In 2004, facilities in Region 6 reported almost 100 percent of the pentachlorobenzene. In Region 6, facilities reported an increase of approximately 369,000 pounds since 2000, including an increase of 124,000 pounds since 2003.

Exhibit 4.217. Regional Quantity Trends for Pentachlorobenzene, 2000−2004

EPA Region	2000 (pounds)	2001 (pounds)	2002 (pounds)	2003 (pounds)	2004 (pounds)	Percent Change in Quantity (2000−2004)	Percent of Total Quantity of This PC (2004)
4	8	0	0	0	30	275.0%	0.00%
5	76	66	103	93	59	−22.5%	0.01%
6	239,768	487,483	310,972	484,640	608,602	153.8%	99.99%
8	0	170	70	0	0	NA	0.00%
Total	**239,852**	**487,719**	**311,145**	**484,733**	**608,691**	**153.8%**	**100.0%**

Exhibit 4.218. Distribution of Facilities Reporting Pentachlorobenzene in 2004 and the Quantities of Pentachlorobenzene Reported in 2004, by EPA Region

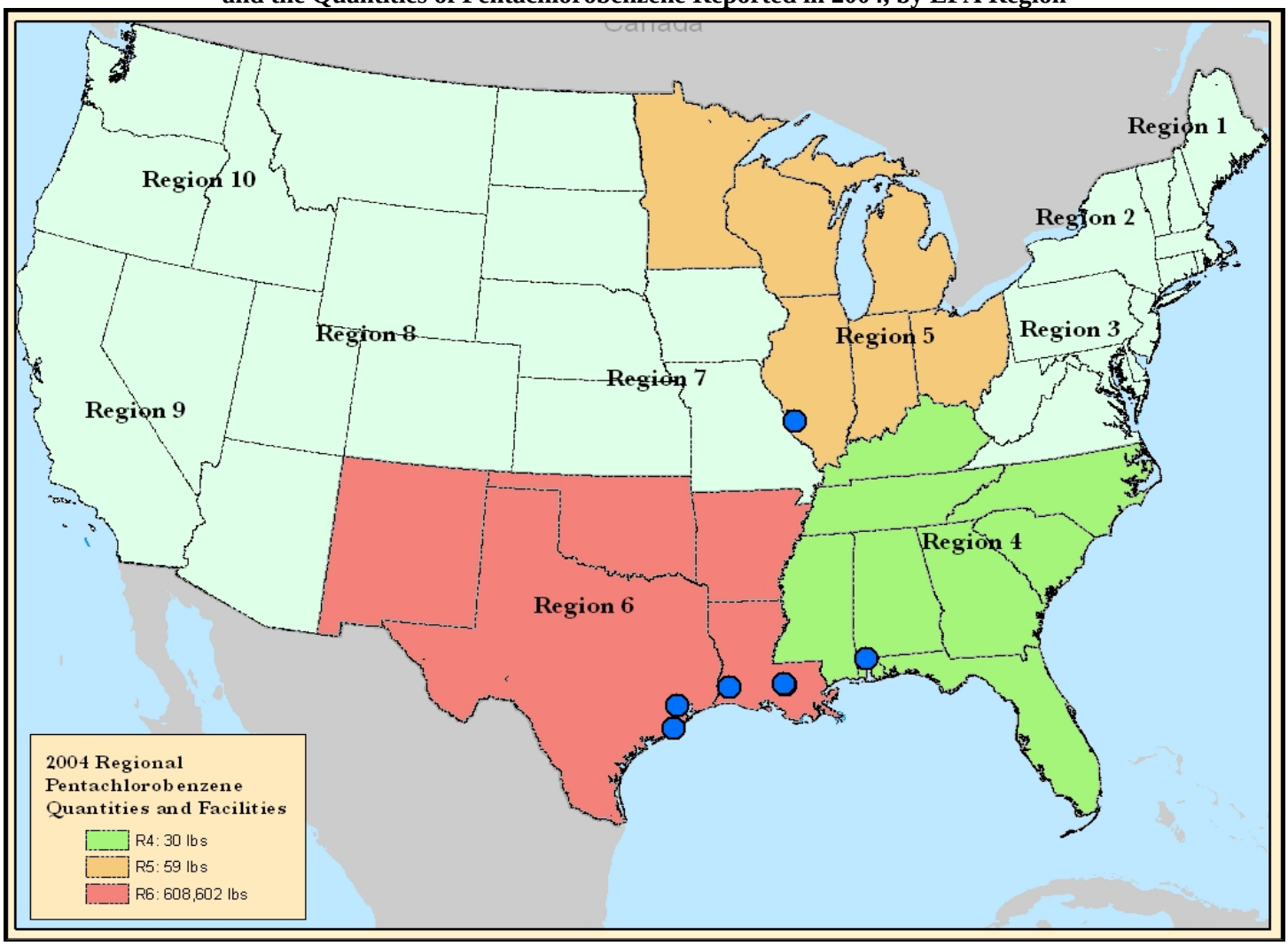


Exhibit 4.219 shows how facilities in each of these three EPA regions managed pentachlorobenzene in 2004. In 2004, virtually 100 percent of pentachlorobenzene was treated onsite by these facilities. Only relatively small quantities of pentachlorobenzene were land disposed or sent to energy recovery. A facility in Region 6 recycled approximately 400 pounds of pentachlorobenzene in 2004.

State Trends:

Facilities in only six states reported pentachlorobenzene in 2000−2004; in 2004, facilities in four states reported this chemical (Exhibits 4.220 and 4.221). In 2004, three facilities in Louisiana reported over 99 percent of the total quantity. Since 2000, these Louisiana facilities reported an increase of approximately 607,000 pounds or approximately 412 percent. These facilities also reported a significant increase of approximately 156,000 pounds compared to the quantities reported in 2003.

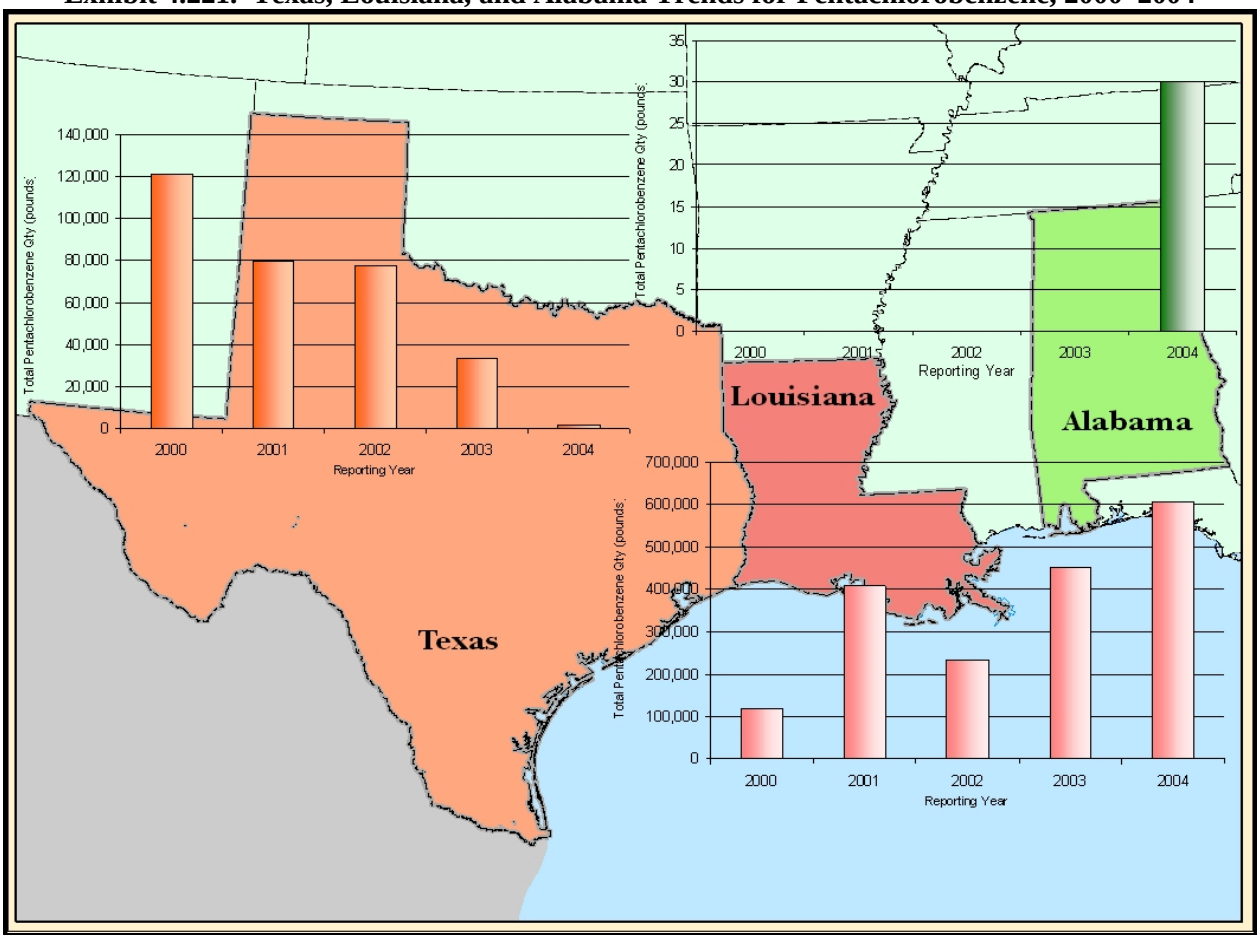
Exhibit 4.219. Regional Management Methods for Pentachlorobenzene, 2004

EPA Region	Quantity (pounds) of Pentachlorobenzene (2004)	Percent of Total Quantity of Pentachlorobenzene (2004)	Disposal (pounds)		Energy Recovery (pounds)		Treatment (pounds)		Recycling (pounds)	
			Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
4	30	0.00%	0	0	0	0	0	30	0	0
5	59	0.01%	0	0	0	0	0	59	0	0
6	608,602	99.99%	30	0	1,335	0	606,667	570	399	0
Total	**608,691**	**100.00%**	**30**	**0**	**1,335**	**0**	**606,667**	**659**	**399**	**0**

Exhibit 4.220. State Quantity Trends for Pentachlorobenzene, 2000−2004

State	Total Quantity (pounds) of Pentachlorobenzene					Change in Quantity (2000−2004)	Percent Change in Quantity (2000−2004)	Percent of Total Quantity of This PC (2004)
	2000	2001	2002	2003	2004			
LA	118,629	407,918	233,271	451,249	606,963	488,334	411.6%	99.7%
TX	121,138	79,565	77,701	33,391	1,639	−119,500	−98.6%	0.3%
IL	76	66	103	93	59	−17	−22.5%	0.0%
AL	0	0	0	0	30	30	NA	0.0%
CO	0	170	70	0	0	0	NA	0.0%
KY	8	0	0	0	0	−8	−100.0%	0.0%
Total	**239,852**	**487,719**	**311,145**	**484,733**	**608,691**	**368,839**	**153.8%**	**100.0%**

Exhibit 4.221. Texas, Louisiana, and Alabama Trends for Pentachlorobenzene, 2000–2004

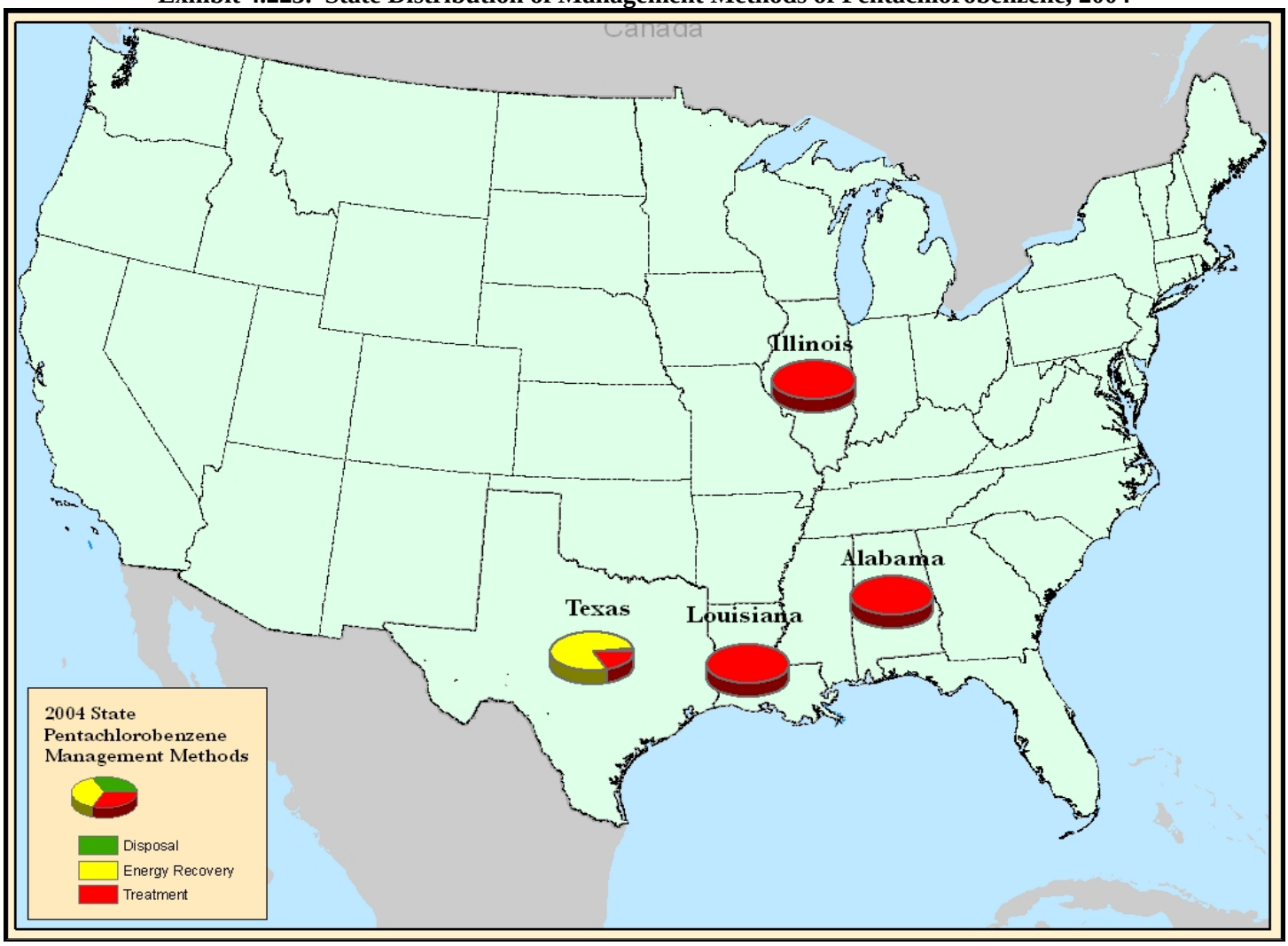


Exhibits 4.222 and 4.223 show how facilities in the four states managed pentachlorobenzene in 2004. Overall, nearly 100 percent of the pentachlorobenzene was treated, primarily onsite. Two facilities in Texas primarily used onsite energy recovery. Only a relatively small quantity of pentachlorobenzene was land disposed by a facility in Texas. This same facility reported the only recycling of pentachlorobenzene in 2004.

Exhibit 4.222. State Management Methods for Pentachlorobenzene, 2000−2004

State	Total Quantity of Pentachlorobenzene (2004)	Onsite Disposal (pounds)	Offsite Disposal (pounds)	Onsite Energy Recovery (pounds)	Offsite Energy Recovery (pounds)	Onsite Treatment (pounds)	Offsite Treatment (pounds)	Onsite Recycling (pounds)	Offsite Recycling (pounds)
LA	606,963	0	0	0	0	606,465	498	0	0
TX	1,639	30	0	1,335	0	202	72	399	0
IL	59	0	0	0	0	0	59	0	0
AL	30	0	0	0	0	0	30	0	0
Total	**608,691**	**30**	**0**	**1,335**	**0**	**606,667**	**659**	**399**	**0**

Exhibit 4.223. State Distribution of Management Methods of Pentachlorobenzene, 2004



Industry Sector (SIC) Trends:

Exhibit 4.224 shows the quantity of pentachlorobenzene reported by facilities in six industry sectors from 2000 to 2004. Two facilities in each of two sectors: SIC 2812 (Alkalies and chlorine) and SIC 2869 (Industrial organic chemicals, nec) reported more than 99 percent of the total quantity in 2004. Compared to quantities reported in 2000, both these facilities reported large increases of 140,000 pounds and 224,000 pounds, respectively, in 2004. These included increases of 51,000 pounds and 69,000 pounds, respectively, compared to quantities these facilities reported in 2003.

The large increase that occurred in 2003 for the SIC 2869 facilities is misleading. For the 2003 reporting year, two facilities (one in Louisiana, one in Texas) changed their primary SIC code from 2812 to 2869. In 2004, one of these facilities further changed its primary SIC code from SIC 2869 to SIC 2821, resulting in approximately 3,600 pounds reported for SIC 2821.

Exhibit 4.224. Industry Sectors Containing Pentachlorobenzene, 2000−2004

Primary SIC	SIC Description	Number of Facilities That Reported Pentachlorobenzene (2004)	2000 (pounds)	2001 (pounds)	2002 (pounds)	2003 (pounds)	2004 (pounds)	Change in Quantity (2000−2004)	Percent of Total Quantity of This PC (2004)
2812	Alkalies and chlorine	1	239,768	487,483	307,772	329,626	380,240	140,472	62.5%
2869	Industrial organic chemicals, nec	1	8	0	3,200	155,014	224,023	224,015	36.8%
2821	Plastics materials and resins	2	0	0	0	0	3,573	3,573	0.6%
2819	Industrial inorganic chemicals, nec	1	0	170	70	0	766	766	0.1%
2865	Cyclic crudes and intermediates	1	76	66	103	93	59	−17	0.0%
2879	Pesticides and agricultural chemicals, nec	1	0	0	0	0	30	30	0.0%
	Total	**7**	**239,852**	**487,719**	**311,145**	**484,733**	**608,691**	**368,839**	**100.0%**

Exhibit 4.225 shows how facilities in these five industry sectors managed pentachlorobenzene in 2004. In 2004, most of the pentachlorobenzene was treated, primarily onsite. Facilities in both SIC 2865 and SIC 2879 used offsite treatment.

Exhibit 4.225. Industry Sector Management Methods for Pentachlorobenzene, 2004

Primary SIC	SIC Description	Total Quantity of Pentachlorobenzene (2004	Percent of Total Quantity (2004)	Disposal (pounds)		Energy Recovery (pounds)		Treatment (pounds)		Recycling (pounds)	
				Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
2812	Alkalies and chlorine	380,240	62.5%	0	0	0	0	379,742	498	0	0
2869	Industrial organic chemicals, nec	224,023	0.0%	0	0	0	0	224,023	0	0	0
2821	Plastics materials and resins	3,573	0.6%	30	0	569	0	2,902	72	399	0
2819	Industrial inorganic chemicals, nec	766	36.8%	0	0	766	0	0	0	0	0
2865	Cyclic crudes and intermediates	59	0.1%	0	0	0	0	0	59	0	0
2879	Pesticides and agricultural chemicals, nec	30	0.0%	0	0	0	0	0	30	0	0
	Total	**608,691**	**100.0%**	**30**	**0**	**1,335**	**0**	**606,667**	**659**	**399**	**0**